ENGINEERING NEWS-RECORD

Joining Brazil and Argentina, this new bridge is a major Pan-American Highway link.

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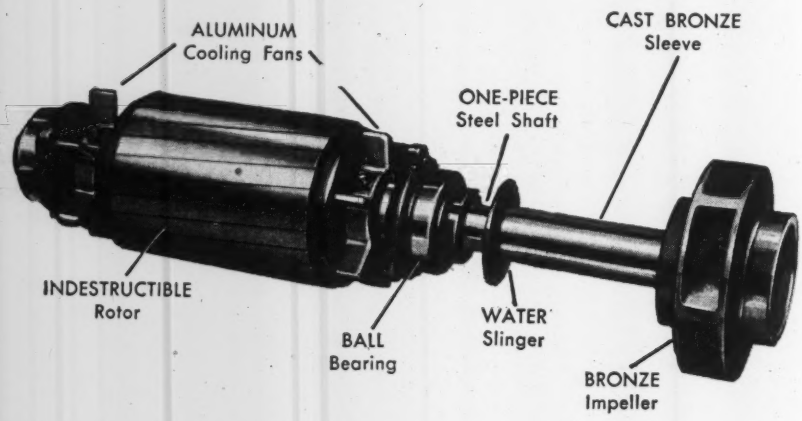
Here's Key

to Why A-C's Smooth-Running Electrifugal Pump is the Finest of its Kind!

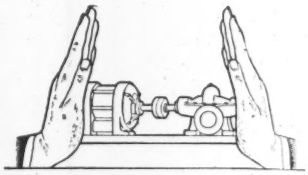


NEW KIND of pumping power now gives you new standards of performance and economy! Allis-Chalmers engineering has combined pump and motor into a single, compact unit—the "Electrifugal" Pump—which takes less space, gives you smooth operation with maximum protection against dangers of abnormal wear, leakage, corrosion, vibration! One-piece iron casting forms motor yoke, bearing housing, pump bracket and feet. One shaft running on 2 ball bearings carries the motor-rotor and pump impeller (see above). Result: true alignment, smooth operation—less maintenance! For you that means extra strength, extra value in terms of operating economy and long life. For complete information about this great pump, call our nearest office, or write ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN.

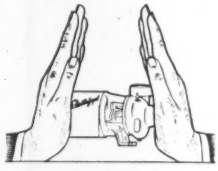
HEAR THE BOSTON SYMPHONY: *Saturday, American Broadcasting Co.*

A 1933

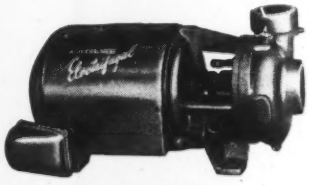
SQUEEZ PLAY CUTS SPACE 33%!



PROBLEM: Here is conventional pump and motor. How can we couple them together *better*—to save space, increase stability, and provide rigid alignment.



SOLUTION: We design a new kind of pumping unit—the one and only "Electrifugal" Pump! Motor and pump are now on one shaft—which cuts space 33%, assures alignment and smooth operation. No wonder "Electrifugals" give you more pumping power for your money!



SEA-BLUE BEAUTY: Modern design of Electrifugal Pump looks well on jobs anywhere! Capacities from 15 to 1600 gpm—heads up to 500 feet.

ALLIS-CHALMERS *Electrifugal* PUMPS

The Week In Engineering and Construction

ENGINEERING NEWS-RECORD • NOVEMBER 22, 1945 • VOLUME 135 • NUMBER 21

Timing of public works seen as construction aid

Public Works Construction Advisory Committee reports to Federal Works Administrator on public construction as a stabilizing factor

Some stabilization of the construction industry can be obtained through the proper timing of public construction, according to the Public Works Construction Advisory Committee set up last April by the Federal Works Administration, but such timing can only have a very small effect on the national economy. This conclusion is contained in a report to Major General Philip B. Fleming, head of the FWA, made public Nov. 19.

The committee, which is headed by E. Lawrence Chandler, Washington representative of the American Society of Civil Engineers, consists of Don Hanks, American Municipal Association; F. Stuart Fitzpatrick, U. S. Chamber of Commerce; Edmund R. Purves, American Institute of Architects; H. E. Foreman, Associated General Contractors of America; M. X. Wilberding, American Society of Mechanical Engineers; Frederic Bass, American Public Works Association; J. W. Follin, Producers' Council; B. E. Crihfield, Council of State Governments; R. J. Gray, American Federation of Labor; Paul Betters, U. S. Conference of Mayors, and Hal H. Hale, American Association of State Highway Officials.

More help during a decline

More benefit from advance planning and timing can be obtained during a depression than in checking a boom, the committee said in summarizing its findings, as follows:

1. Substantial good can result from a well-organized program for increasing the volume of construction during a period of depression by advancing the timing of sound public works projects that have been fully planned for ultimate construction although the immediate need for them may not be imperative.

2. Relatively little reduction in the total volume of construction is to be obtained at the crest of an upswing in the economic cycle by deferring construction of public works.

3. Completion of plans and preliminary arrangements for an adequate volume of local public works in advance of the need for them depends upon availability of funds for the purpose. We believe that the current policy of advancing Federal funds, to be repaid when the work is undertaken, to local governmental agencies for the purpose of planning is helpful and that this program should be continued with adequate appropriations.

New construction, the committee said, accounts for 12 percent of the total national economy, or 15 percent if repair and maintenance expenditures are included. Public work constitutes one third of the total new construction, or 4 percent of the national economy. "However, the effect of construction in the life of the country is much greater than may be inferred from these percentages".

Amount under FWA control

"Starting with the assumption that the construction industry will represent 12 percent of the national income during prosperity, and that public work of all classes may be expected to account for one-third of that proportion, it is enlightening to separate public work into some of its components. Federal programs, including federal aid to highways, are likely to account for 50 percent of total public works construction. The Federal Works Agency is likely to have either full or part control of the financing of 50 percent of the total federal work.

"Some public works projects are so closely related to private development that their construction cannot wisely be delayed when private activity is expand-

(*Continued on p.* 16)

Cut housing contract "trouble" clause

Bowing to the opposition of contractors who refused to submit bids so long as a contract clause providing unusual penalties for labor troubles was included, the New York City Housing Authority last week deleted the clause—and received nine bids on its Elliott housing project.

Low bid, submitted by the H.R.H. Construction Corp., 9 East 40th St., New York City, was $2,747,000. The bid was $476,000 higher than the original engineer's estimate for the work, however. No award was announced immediately.

Bids on the project, first in the authority's postwar schedule, were originally scheduled for Oct. 29 (*ENR*, Nov. 1, vol. p. 563). On that date, thirteen qualified bidders refused to submit bids on the ground that clause 32A in the contract, entitled "Avoidance of Labor Troubles", was unacceptable.

This clause says in part that: "The contractor shall not have material provided . . . or work performed . . . or means employed . . . that would in any way cause or result in delay of or strike upon the work." Any violation of this requirement might, under the terms, "be considered a proper and sufficient cause for declaring the contractor to be in default and for the authority to take action against him."

Edmond D. Butler, chairman of the authority, said at the time that similar clauses were included in "most city contracts", but called for immediate conferences with contractors' representatives to discuss the matter. The authority made no statement last week as to the deletion of clause 32A.

The contract contains still another clause referring to labor difficulties, which says in part: ". . . The contractor shall not employ men or means which may cause strikes, stoppages or other similar troubles by workmen, either by the contractor, his sub-contractors, or by other contractors and their subcontractors, or by other workmen whose services affect progress of work."

The housing project is planned to provide for 617 families in four 11 and 12-story apartments.

NEWS IN BRIEF

In telegraphic form, here are further news developments on the engineering and construction front during the week.

Water Supply — The *Indianapolis, Ind., Water Co.* plans to double the capacity of its Fall Creek filtration plant to handle an additional 16 m.g.d. . . . *Houston*, Tex., has completed half of a $3,000,000 program to lay new water mains. . . . *Charlotte*, N. C., approved a $5,000,000 expansion of water and sewerage facilities. . . . *Akron*, Ohio, will replace equipment and enlarge buildings at its Lake Rockwell plant. . . . *Connersville*, Ind., awarded a contract to John W. Moore and Sons, Inc., to plan water softening and filtering systems.

Construction — Construction started on the $1,400,000 state veterans diagnostic hospital at *Jacksonville*, Ill. . . . Purdue University, at *La Fayette*, Ind., let contracts for $1,325,000 worth of campus housing for married students. . . . The *Louisville*, Ky., COURIER-JOURNAL AND TIMES Co., announced a $3,000,000 structure to house the papers and radio station WHAS . . . Preliminary work is under way at *Lorain*, Ohio, for a $3,000,000 B. & O. railroad loading dock . . . Catholic Diocese of *Rochester*, N. Y., planned building expenditures of $1,500,000. . . . *Phoenix*, Ariz., prepared plans for a $963,400 courthouse extension. . . . Greyhound Terminal of *Cleveland*, Ohio, said it would build a $1,000,000 downtown terminal. . . . *Indiana University* announced a 10-year, $25,000,000 expansion program.

Sewerage — *Tampa*, Fla., considered engineers' estimates placing cost of a master sewer system at $5,986,000. . . . As a result of U. S. Public Health Service survey, four municipalities west of *Houston*, Tex., increased chlorination of effluent dumped into Brays Bayou. . . . *Franklin County*, Ohio, approved a $1,500,000 bond issue to finance sewer work, and Hamilton and Butler counties approved issues of $2,676,090 for sewage plant and incinerator. . . . *Fort Wayne*, Ind., surveyed its existing system preparatory to a master plan for future development. . . . *Louisville*, Ky., got a $100,000 FWA grant to plan a $4,997,000 improvement program.

Highways — *Arkansas* announced it would spend $10,880,000 within the next year. . . . *New Jersey* awarded a $677,468 contract for an overpass at the Camden Airport Circle. . . . *Massachusetts* announced a $10,832,000 road and bridge building program for the coming year. . . .*Louisiana* authorized PRA to advertise for bids on embankment work for the Lake Charles Bridge. . . . *Arizona* authorized $1,000,000 of work to start. . . . *Canada* said it expected to spend over a billion dollars within ten years. . . . *Missouri* advertised for bids on the first 20 of its highway projects.

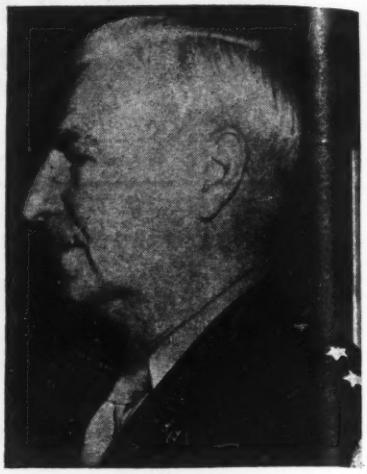
Miscellany—The *Georgia State Ports Authority* selected a site at Savannah for an $8,440,000 port development. . . . *Missouri's* governor vetoed a bill to increase membership of the highway commission to 10. . . . FWA advanced funds for plans for a vehicular tunnel and bridge to connect *Norfolk* and *Portsmouth*, Va. . . . A contract to prepare plans for a $2,000,000 replacement of Rhode Island Stone Bridge, Tiverton, R. I., was awarded.

Sewer use tax now legal in Philadelphia, Pa.

Legality of Philadelphia's proposal to levy a sewer use tax was established on Oct. 20, when the Pennsylvania Supreme Court decided that the city possessed that authority under existing state legislation. Receipts from the tax, which is based on metered water consumption, are to be used for financing and maintaining a $42,000,000 sewage disposal improvement program.

Plans for the project, according to Martin J. McLaughlin, director of public works, are virtually complete and construction could start early next year.

Complete assessment of the tax will not be made effective until the improvement program is finished, probably in 1950. Therefore, during the first year, the tax will be only 60 percent of the water bill and in succeeding years an increase of 10 percent will be made until it equals the water bill.



Maj. Gen. Robins retires as deputy engineer head

Maj. Gen. Thomas M. Robins, 64, Deputy Chief of Engineers during the Army's greatest wartime task in history, retires Nov. 23, it was announced in Washington last week.

An engineer officer since his graduation from West Point in 1904, Gen. Robins' long service has taken him throughout the United States and most of its territorial possessions. He served in Cuba in 1908 with the Army of Cuban Pacification, and in 1912, did engineering work on the harbor defenses of Manila, P. I.

From the summer of 1917 until September, 1918, he was engineer officer of the Port of Embarkation, Hoboken, N. J. He then served successively in the Office of the Chief of Engineers; in command of the 220th Engineers, Camp Humphreys, Va., and on other duty.

After graduation from the Army War College in 1926, he served in the office of the Chief of Engineers at Washington, and in November, 1929, became South Pacific Division Engineer at San Francisco. He later became Pacific Division Engineer (1934) and North Pacific Division Engineer (1937), at Portland, Ore. During his tenure at Portland, the Bonneville Dam was designed and built.

Gen. Robins became a brigadier general and Assistant to the Chief of Engineers in June, 1939. He became a major general January 28, 1942, and was named Deputy Chief of Engineers in October, 1943.

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Big South American road programs will aid international communication

Visiting engineers see opportunities for U. S. consultants, construction men—Chile, Ecuador and Bolivia tell plans

Seeking vastly improved motor communications both within their own borders and with neighboring states, the nations of South America are rapidly implementing plans for huge expenditures on roads, according to a group of Latin-American engineers now visiting the United States.

The group foresees increasing employment of U. S. consulting firms and construction specialists to aid in solving the difficult problems often involved in South American roadbuilding.

Visiting the United States under the auspices of the Office of Inter-American Affairs, the Public Roads Administration and the American Road Builders Association, the group includes: Oscar R. Berredo, chief engineer of maintenance, and Ernesto B. Waidele, chief engineer of equipment and materials, the highway department of Chile; Luis A. Mino, chief engineer of the highway department of Ecuador, and Jorge Lopez, chief engineer, public works department, La Paz, Bolivia. The men will visit road-machinery manufacturing plants and study U. S. Highway planning.

Chile to award 300-mi. job

Chile has well advanced plans for a 6-yr. public works program expected to require an appropriation of $4,000,000 yearly for the construction and improvement of highways. During that period at least $5,000,000 will be spent abroad for equipment and supplies. Asphalt requirements alone are expected to total 100,000 tons.

On Oct. 10, Chile opened bids for 300 mi. of highway between Sanitago, the capital, and La Serena in the province of Coquimbo. Five separate contracts are to be awarded soon. Local builders probably will get most of this work, which is primarily new construction to replace an old road.

The $15,000,000 project is expected to take four years to complete. It will require 5,000,000 cu. yd. of excavation. About 65 mi. will be paved with portland cement concrete and the remainder with asphalt. Much of the highway is across desert terrain, but five reinforced concrete bridges, each about 300 ft. long, will be built. Also planned are: Two major vehicular tunnels to shorten by 20 mi. the 90-mi. highway between Sanitago and Valparaiso, major seaport of Chile. One tunnel will be a mile long and the other one-half mile. Both will be made sufficiently large to accommodate a two-lane road and a sidewalk at either side.

Big Bolivian job advances

Work is advancing in Bolivia on 295-mi. highway to connect the towns of Cochabamba and Santa Cruz. On July 16, a $95,000,000 contract for this project was awarded to a combination of Warren Bros., Cambridge, Mass., and F. H. McGraw Co., Hartford, Conn. (*ENR* July 26, vol. p. 88).

In addition to the highway project, which calls for an all-weather road, paved with asphalt, to be built under the supervision of U. S. Public Roads Administration engineers, Bolivia plans a 400-mi. railway project. This work will complete a highway-railroad route extending from La Paz to Santa Cruz. The importance of this work is revealed by the fact that Bolivia at present has no paved highways outside of the larger cities, although the country is 430,000 sq. mi. in area and has a population of 3½ million.

Mr. Lopez, who is a 1919 civil engineer graduate of Purdue University, said that improved water supply facilities are planned for the city of La Paz, which has a population of 300,000. Other construction planned at La Paz includes a new airport, extensive housing, and considerable street and flood control construction.

Much Ecuador work underway

The J. A. Jones Construction Co., Charlotte, N. C., has a $2,000,000 contract underway on the Pan American Highway in Ecuador, to connect Guamote with Tambo in the central part of the country. The 120-mi. job was started last Sept. 20 (*ENR* Oct. 25, vol. p. 547), and is scheduled to be completed by January, 1948. The work will leave only about 50 mi. of Ecuador's portion of the highway to be completed.

The Jones firm is also at work on a 25-mi. project in the western part of the country between the towns of Monte Cristo and Jipijapa. This work, which is being done under a $338,000 contract, calls for a graveled highway 20 ft. wide.

Tucker McClure, of Los Angeles, is also working in Ecuador on two jobs. One starts at the town of Duran, near Guayaquil, and extends 130 mi. eastward to the town of Tambo. This project is financed partially with $1,200,000 from the Export-Import Bank. McClure is also building a 20-mi. highway southwestward from Guayaquil to the Pacific Ocean. This work is expected to cost nearly a million dollars.

The government of Ecuador, which has completed about 4,000 mi. of highways, including 600 mi. of paved construction, is also engaged with its own forces on several sections of new road.

Kentucky law prohibits diversion of road funds

Kentuckians Nov. 6 voted about three to one in favor of an amendment to the state constitution to prohibit diversion of state revenues from sale of automobiles, gasoline, licenses, etc., to any other purpose than highway work.

The measure had been strongly supported by Governor Simeon Willis and J. Stephen Watkins, highway chief.

Citizens were warned, however, that the amendment may make inevitable a rise in other forms of taxation to support various education, pension, state institutional and other needs formerly partially supported by the road money.

Oklahoma roads get $10 million

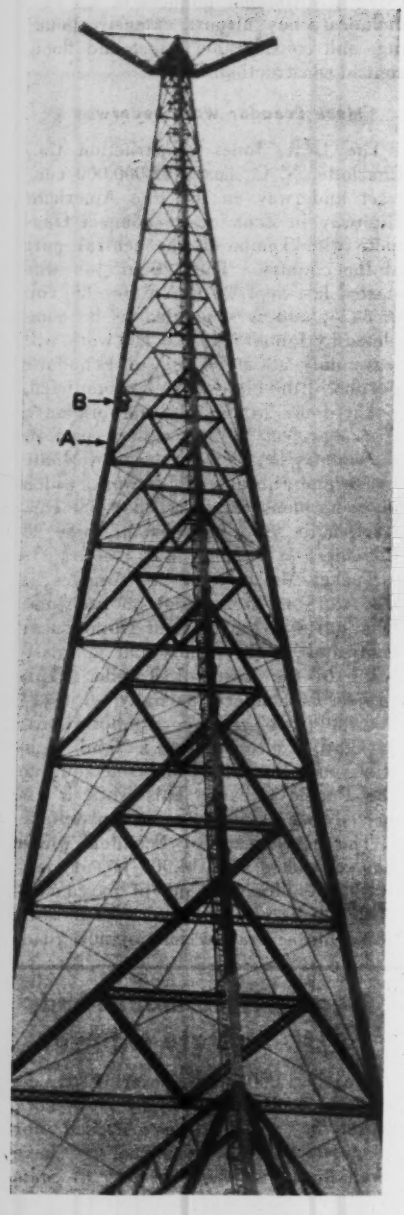
Under a new state law, Oklahoma's highway department expected to receive $9,750,000—the surplus in the state's general fund for the current fiscal year. Under a measure passed by the last legislature, all such surplus must be turned over to the highway commission for road building purposes.

Nearly 1,000 maps ready for N. Y. State highways

Nearly 1,000 maps, covering parcels of land to be acquired by New York state for rights-of-way needed for planned highway construction, have been filed with the Secretary of State by J. Frank O'Marah, director of the Bureau of Rights-of-Way and Claims of the Department of Public Works of New York State.

Lands included in the maps have been or will be obtained to make way for expansion and realignment of existing roads and bridges which are soon to be replaced by more adequate facilities, as well as for construction of new highways over entirely new routes. Lands needed for the construction of a new bridge across the Black River between Carthage and West Carthage in Jefferson County are included.

Total construction costs of the projects to be built on sections involved transactions for which maps have been filed recently, will approximate $5,000,000 Mr. O'Marah said.



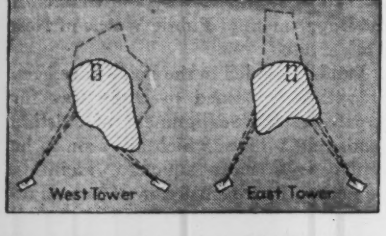


Fig. 1. One of the two 600-ft. towers before destruction. Explosive was placed at A and B, 370 and 390 ft., respectively, above the base. When the towers collapsed most of the steel fell in the shaded area; a few loose pieces scattered in areas outlined by the broken lines. All of the steel frame landed within 60 ft. of the tower base.

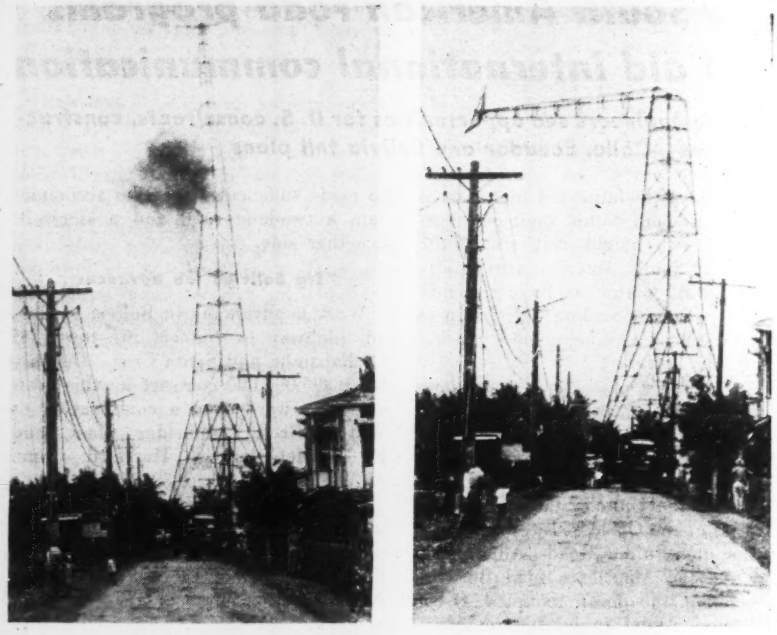


Fig. 2. Explosion of the two charges removed a 20-ft. section of one of the three legs, causing upper portion of the tower to topple. Right: The two remaining legs bent to serve as a hinge around which the falling top swung.

Quick Method of Tower Demolition Keeps Wreckage Near Base Area

Three steel towers 600 ft. high were built at Cavite near Manila, P. I., some 27 years ago to support radio transmitting aerials. Changes that came with the years affected the area close to their bases which was successively adapted to many uses. After the recent recapture of the Philippines by our forces the Navy found it desirable to remove two of these steel towers quickly and without interfering with activity adjacent to their bases.

The removal job would have been relatively easy if the towers could have been simply tipped over and cut up on the ground. That was impracticable because of activity around the bases. Nor was it desirable to take them down piece by piece beginning at the top. That would have been too slow an operation for a job with AAA-1 priority. The problem of devising some speedier means of demolition was turned over to the 77th Naval Construction Battalion, Comdr. C. T. Wende, officer in charge.

A demolition method that met all requirements was worked out and used successively on the two towers. The objectives were fully accomplished in that there was no damage to structures near the base and all of the steel fell within or quite close to the area occupied by each tower base. The time required to do the work involved in preparation for the shot was 4 hr. and 15 min. At the end of this time the steel wreckage was in a pile at the tower base.

How the job was done

The method of procedure was to place charges of 78 lb. of TNT at points "A" and "B" on one leg of the tower as indicated in Fig. 1. These two points were 370 and 390 ft., respectively, above the base. Each charge was divided into three parts and one part was fastened to each of the three solid faces of the leg. The legs were built-up beams of square section and had open lacing on one face. The idea of locating the charges just at these points was that the explosion would remove a 20-ft. length of leg essential to stability of the structure, causing the portion above

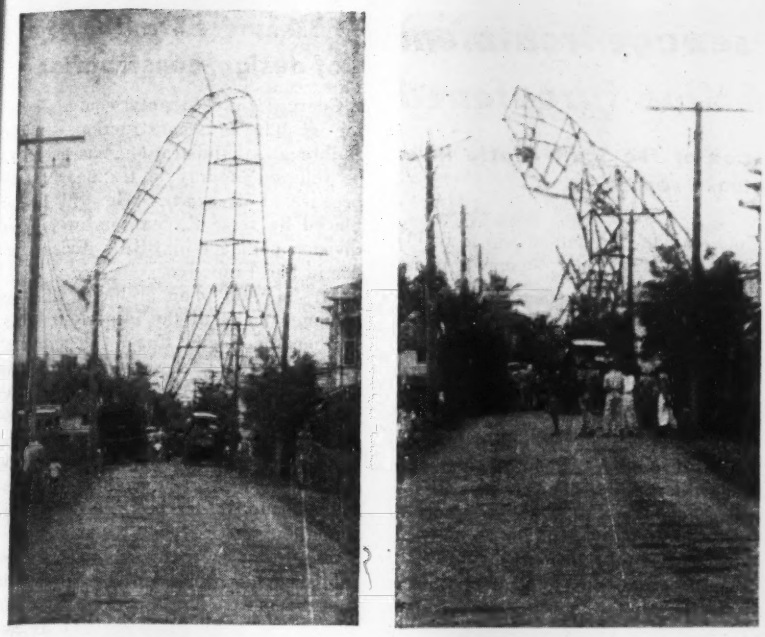


Fig. 3. The falling top held together well until near the bottom of its swing. Right: Lower portion of the structure was so wrenched by the falling top that complete collapse resulted.

this level to hinge like a jackknife about this weakened section of the tower. The two remaining legs, it was believed, despite the bending would prevent the upper portion from falling away from the tower base and would tend to hold it in a vertical plane during the fall.

Impact aids collapse

By shooting out a section well above mid-height of the tower the length of the falling top was shorter than the portion left standing. Thus the top section not only could swing down freely through a full 180-deg. arc but it would come against the base with considerable force of impact, thus contributing to the desired collapse of the heavier base sections. There was a good deal of stability in the heavier sections of the base members and the spread footing. The completeness of the collapse is shown by the final picture of the wreckage which was taken before the work of cutting up the steel began.

Successive stages in collapse of the tower are shown in the series of pictures which indicate how sudden removal of a section of one leg started the desired collapse in a way to utilize the steadying and guiding effect of the two remaining legs. Except for a few rivets no steel landed on the ground farther than 60 ft. from the tower base.

Precisely the same procedure was followed and the same results attained in the demolition of the east tower, which was taken down shortly afterward.

Anchor bolts cut prior to firing

On the west tower, prior to firing the charge of explosives, the anchor bolts on one of the three legs were cut. This was done to cause the greater mass of the steel in its final movement to swing in toward the other legs and clear of the road located immediately adjacent to that footing. Stresses set up by the collapsing tower pulled the loose footing off the concrete base and left the road free of even temporary traffic interference. Other than in this particular the two towers were demolished in exactly the same manner and the reactions were practically identical.

The towers were designed and built by the American Bridge Co. Demolition of the tower was completed on June 28, 1945.

Fig. 4. Anchor bolts had been cut in advance on one of the three footings (the one in the foreground), thus causing wreckage to swerve clear of the road as it fell.

Inadequate Denver sewage treatment charged by state—Action threatened

State Board of Health finds pollution of the South Platte River from city's sewage—Engineers to make report.

As a result of a controversy between the Colorado State Board of Health and Denver city officials, the firm of Black and Veatch, consulting engineers of Kansas City, has been retained to make a report on the city's sewage disposal facilities.

The Denver sewage treatment plant, which began operation in 1937, was originally designed by Black and Veatch.

The difficulties started when Dr. Roy L. Cleere, executive secretary of the State Board of Health, reported pollution of the South Platte River was a result of inadequate treatment of Denver sewage, and ordered Mayor Stapleton to "do something about it." Dr. Cleere made the charge of inadequate treatment facilities after receiving reports of studies made by Ben V. Howe, sanitary engineer for the state board.

According to Mr. Howe, the city had used the chemical treatment portion of its plant for only one week after its installation. Cost of the chemical treatment is estimated at from $20,000 to $22,000 annually.

Legal action threatened

Primary response from Mayor Stapleton to the state's charges indicated that the city believed itself to be abiding by all state health laws in the disposal of sewage. Dr. Cleere, however, immediately threatened legal action to enforce the health board's order.

However, before District Attorney J. T. Burke could bring suit, city officials agreed to employ Black and Veatch to conduct a survey of conditions.

The present method of treatment is said to endanger the health of residents along the river below Denver, as well as to Denver residents who consume vegetables raised in a truck garden area along the river banks. Originally the plant (see *ENR* Oct. 15, 1936, p. 535, for description) provided for primary clarification with chemical precipitation, followed by filtration of the effluent through magnetite sand filters. The latter were soon abandoned because of operating difficulties due to deterioration of the mesh supporting the sand.

It is reported on good authority that operating results from the plant, despite the absence of filters and discontinuance of chemical treatment, meet the original requirements of the state health board, which call for an effluent whose B.O.D. (biochemical oxygen demand) is not more than 45 ppm.

Pennsylvania continues fight on pollution

One hundred and two industrial companies throughout Pennsylvania have been ordered by the Sanitary Water Board of the State Department of Health to prepare plans for waste treatment plants by June 1, 1946.

The alternative is to abate pollution at once. As the latter step would in almost every case result in the closing of the industry, a spokesman for the board said that it was expected that all would immediately prepare plans.

Previously, the board had notified some 300 municipalities to prepare plans for the elimination of sewage pollution, and the state is prepared to make outright grants of 50 per cent of the cost of plans for sewage and industrial waste treatment plants, the money to be allocated by the Department of Health (*ENR* July 12, vol. p. 17 and Oct. 4, vol. p. 417).

PBA names Stanton chief of design, construction

George Howe, deputy commissioner for design and construction, Public Buildings Administration, has asked to be relieved of duty in the near future because of ill health. He will be replaced by Jesse E. Stanton, at present division engineer of PBA's division office in San Francisco.

Mr. Stanton is an architect who has designed many of the important buildings on the Pacific Coast. A native of San Francisco, he designed schools and firehouses after the earthquake and fire in that city. Later he was associated with D. H. Burnham & Co. on the "Chicago Beautiful" plans, and with the New York firm of Warren & Wetmore on hotel and other large building construction.

Returning to the west coast, he established his own architectural firm in San Francisco and Sacramento. Mr. Stanton went to PBA in 1941 as consulting architect on the program to expedite the construction of emergency war housing, and last July was appointed executive head of the San Francisco office.

Mr. Howe has been commissioned by a publisher to write a book on modern architecture, and if his health permits, will probably later become head of an architectural and engineering organization in Philadelphia, which was his home before entering government service in 1942.

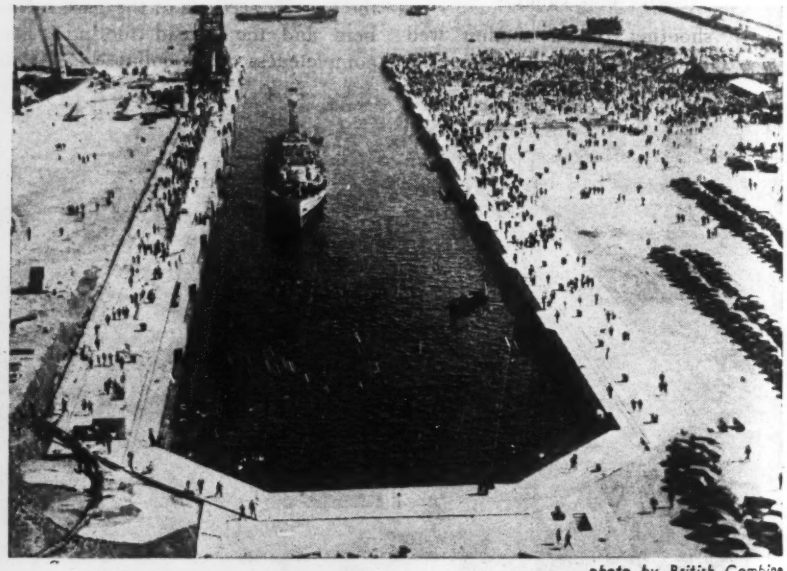


photo by British Combine

Open $14 million South African graving dock

Completing a $54,000,000 program planned to equip Table Bay Harbor, Cape Town, South Africa, as a year-round all-service port was the opening of the graving dock shown above. Called Sturrock Dock, the new structure was built at a cost of $14,040,000, and is said to be capable of handling the largest vessels afloat.

Labor, material shortages delay work

Although the Ohio Welfare Department has $23 million in funds, and plans completed for 9 million dollars worth of construction, labor shortages and material prices will hold back start of the program, officials said recently.

Frazier Reams, director, and John W. Waidner, business manager, said that contractors had been forced to make their bids higher than normal because of uncertainties in obtaining materials and men. Contractors have been unwilling to bid at all on some jobs, Mr. Waidner added, citing one $7,000 repair project which drew no offers.

Among the $9 million of work for which plans have been completed but which will be delayed until building conditions are more favorable are: a $3,000,000 remodeling and expansion program at Apple Creek State School; a $3,000,000 project at Hawthornden; a 200-bed addition to the Athens State Hospital; a 212-bed addition to the Columbus State Hospital, and a $42,000 industrial building at Dayton.

The Welfare Department has succeeded, however, in awarding contracts totaling $931,000 for repair and remodeling of the Mt. Vernon Hospital for mental tubercular patients, and expects work to start soon on a $119,000 dormitory for the Girls Industrial School at Delaware and other structures.

Kansas breaks up road bids

The first letting of contracts under a 25 million dollar highway construction program for Kansas has been scheduled for November 26, according to the State Highway Commission.

The projects to be let are the first for which plans and specifications were completed under the state's cooperation with the federal-aid highway program.

The commission said that some 200 projects were considered for immediate contract award, including several which, because of their size, would require perhaps a year for completion. However, it was found that contractors were reluctant to bid on contracts involving large amounts in labor or materials. Therefore, the commision said it seemed imperative that work should be awarded in a series of small contracts.

The new jobs, involving some two million dollars of work, include work on U. S. Highways 24, 81, 169, 281 and 288, and on state highways 99, 4, and 6.

Receipts of the Nashville, Tenn., waterworks department, during the 1944-45 fiscal year broke all records of the municipally-owned water distribution system, J. W. Bauman, City Commissioner announced.

Arizona building men get 9c per hr. pay raise

Construction trades workers in Arizona will receive pay raises averaging nine cents per hour, under terms of an agreement announced jointly by the state's Associated General Contractors chapter and the Building Trades council.

The agreement, which becomes effective Jan. 1, 1946, was effected by negotiations between committees representing the contractors and unions without outside aid. It continues a working relationship that has been in effect since Jan. 1, 1942.

In a joint statement, contractors and union representatives said that more than $600,000,000 in construction in the state has been completed without a single strike.

Labor organizations represented in the conferences include the carpenters, operating engineers, construction laborers and teamsters unions.

Liaison committee named for C.I.A. Council

John Stevens, chairman of the Construction Industry Advisory Council for the Chamber of Commerce of the United States has appointed a liaison committee with government to stimulate construction. The appointments were an outcome of a recent Washington meeting (*ENR*, Nov. 8, vol. p. 621).

Members are: James Edmunds, committee chairman, president, American Institute of Architects, Baltimore, Md.; Harry A. Dick, president, Associated General Contractors of America, Portland, Ore.; Richard J. Gray, acting chairman of executive council, Building and Construction Trades Department, A. F. of L., Washington, D. C.; Norman P. Mason, vice-president, National Retail Lumber Dealers Association, North Chelmsford, Mass., Robert W. McChesney, president, National Electrical Contractors Association, Washington, D. C.; Joseph E. Merrion, president, National Association of Home Builders, Chicago, Ill., Allan J. Saville, president, Allan J. Saville, Inc., Richmond, Va.; Charles Warner, president, Warner Company, Philadelphia, Pa.; and Douglas Whitlock, chairman, advisory committee, The Producers' Council, Washington, D. C.

Canadians ask more civil service pay

Fearing depletion in caliber and numbers of engineers in civil service due to low salary rates, the Canadian Council of Professional Engineers and Scientists recently urged the dominion government to consider immediate upward salary adjustments.

W. P. Dobson, chairman of the council, in a letter to Prime Minister W. L. MacKenzie King, pointed out that repeated recommendations for salary raises had been submitted to the government for consideration, although no definite action has as yet been taken. Mr. King acknowledged receipt of the letter, promising prompt consideration.

Mr. Dobson said that low pay in the civil service would unquestionably result in Canadian engineers and scientists seeking posts in private industry and particularly in the United States.

"The national interest is directly involved," Mr. Dobson said. "At the present time Canada is faced by the many problems of reconstruction. . . . These conditions make it essential that the government have at its command the best professional and scientific service available.

"An inspection of the record will show that an appreciable number of trained civil servants are at present turning to other activities; some former employees . . . now in the armed services, feel unable to return to their former departments; and it is proving increasingly difficult to recruit trained men of the necessary caliber and experience.

"It is the firm conviction of the council that as soon as Labor Exit Permit regulations are removed, large numbers of Canadian scientists will cross the border to fill some of the many positions in the field of science for which there are no American citizens available because wartime restrictions in the U. S. resulted in about 100,000 fewer technical persons being produced than . . . in normal times. This development is bound further to deplete the civil service of Canada unless remedial action is forthcoming."

Mr. Dobson said he had been empowered by the council to urge "without delay" the placing into effect general adjustments in the salaries of professional engineers and scientists in the civil service to retain men now in the service and attract an adequate supply of new recruits.

Finish Pan-American road bridge to link Argentine, Brazilian highways

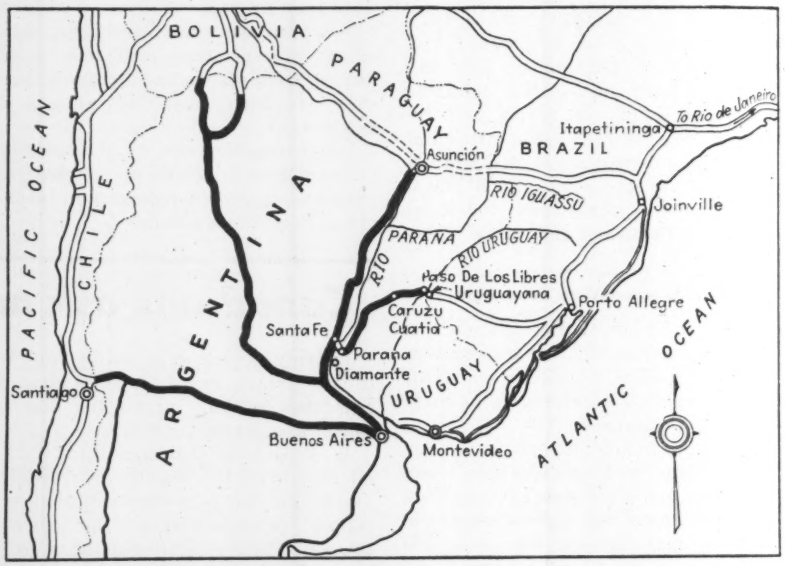
International structure to carry rail, auto and pedestrian traffic—On main Rio Janeiro-Buenos Aires road

A 5,924-ft. international bridge spanning the Uruguay River between Brazil and Argentina has been completed as an important link in the Pan American Highway system. It is scheduled for official opening in December, according to the Transportation Department of the Office of Inter-American Affairs.

Financed jointly by the two countries, the structure connects the Argentine community of Paso de los Libres and the Brazilian city of Uruguayanas. The river crossing is a reinforced-concrete structure 4,612 ft. long and the approaches total 1,312 ft. in length. The main structure consists of 40 deck-girder spans each of 115 ft. in length and providing a 46-ft. clearance above normal water level. The 41-ft. wide deck provides a two-lane roadway for vehicles, a single meter-gage railroad track, and a sidewalk for pedestrians.

The bridge forms a part of the Pan American Highway system between Buenos Aires and Rio de Janeiro, being 1,412 miles by highway from the former city and 704 highway miles from the Brazilian capital. Although this part of the highway is not entirely completed at present, during the dry season cars can travel over the route. When the road is open, much highway traffic is expected to cross the river at this point.

A large amount of rail traffic is also expected to use the structure, which is 1,680 rail miles from Rio de Janeiro. The connecting Brazilian railroads are meter-gage and there is much meter-gage trackage in Argentine. The Argentine government has approved a plan of the Argentine State Railways to extend the standard-gage, state-owned Ferrocarril del Este an additional 60 miles from Caruzu Cuatia to the bridge and to install a third rail on the line from the International Bridge to Diamante, below Parana on the Parana River, a total distance of about 315 miles. This construction will make it possible to move railroad cars from Rio to almost any part of Argentina and even to Bolivia or Chile. A railroad car ferry at Diamante connects with the railroad lines in Santa Fe.



Map above shows (near center) location of new international bridge between Uruguayanas, Brazil, and Paso de los Libres, Argentina, to form a vital link in the Pan American Highway system between the two nations. Other sections of the road—most at least passable to automobile traffic—are also shown.

At left, a view of the completed bridge, stretching 4,612 ft. over the Uruguay River. The 41-ft. deck provides a two-lane motor vehicle roadway, and space for a single meter-gage railroad track and a sidewalk.

Hospital association lists architects

In order to advise its membership in the selection of architects for new hospital construction, the American Hospital Association is compiling a roster of architects whose knowledge of hospital needs is established.

The qualification procedure is limited to registered architects who are interested in seeking membership in the association. Initiation fee, covering cost of qualification examination, is $50 and dues are $25 per annum. Knowledge of hospital needs will be determined on the basis of plans architects are requested to submit for three completed hospital projects.

Details of the plan may be obtained by writing to the American Hospital Association, 18 East Division St., Chicago 10, Ill.

Airport expansion voted for San Francisco

Forecasting an airport of major national importance for San Francisco, on Nov. 6, the city's voters approved by a five to one margin a $20,000,000 bonding proposal for expansion and improvement to the municipal airport at Mills Field.

Approval of a bond issue means the city will be able to match federal aid funds, should Congress pass pending legislation providing such appropriations, without selling the entire $20,000,000 amount.

The first project in the entire city development, expected to take from two to three years, will be the reclaiming of 500 acres of tidelands on San Francisco Bay, at a cost of $8,000,000, preparatory to extending runways. Other work will include construction of four 8,000-ft. asphalt runways with foundations capable of sustaining 120,000-lb. wheel loads, building new hangars, administration and depot buildings, expanding concrete taxiways, and relocating a section of Bayshore Highway, which now bisects airport land, at a cost of $1,500,000 with the State bearing part of the expense. Additional lands will be purchased for $350,000.

Present installations at the field represent an investment of about $17,000,000, including $13,000,000 spent on facilities by the government in return for title to city-built Treasure Island in San Francisco Bay. In addition, airlines now using the field are reported to be ready to spend many millions for expanding their own facilities.

Make economic survey for Cascade tunnels

An economic survey of three proposed vehicular tunnels through the Cascade Mountains to link eastern and western Washington will be conducted at once by the Washington Toll Bridge Authority. Gov. Mons C. Wallgren has announced.

Studies of the three tunnels were ordered by the 1945 legislature and $100,000 in appropriations authorized for each survey. The economic studies will be followed by engineering surveys if the projects prove economically feasible, the announcement from the Governor's office said.

One proposed tunnel would be on Primary State Highway No. 5 at Naches Pass, Greenwater and White rivers to Cliffdel, near Mount Rainier. The State Highway Department investigated this project several years ago and estimated a 1¾-mi. tunnel with approach roads at that location would cost $15,000,000.

The second bore, from Marblemount in Skagit County to a connection with Primary State Highway No. 16 in Okanogan County, would make possible a new highway through the mountains north of the three existing routes.

The third tunnel—long a subject of controversy—would be a low-level bore that could be used for rail as well as vehicular traffic. The location would be determined by the Toll Bridge Authority but the route usually suggested by its proponents is between Skykomish, east of Seattle, and Leavenworth. It is said that the tunnel could be built for $40,000,000 and that it would shorten the route between Seattle and eastern Washington by 70 miles. Opponents believe the cost would be much greater and doubt that the saving in miles would be more than 15. This tunnel, from 29 to 34 miles long, would be at an elevation of 1,100 ft., as compared to the 2,500 to 3,000 ft. elevations of present rail and highway routes.

Sign long-term contract for Central Valley water

The first long-term water contract for irrigation on the Central Valley Project (*ENR* Sept. 13, vol. p. 339) now being built by the U. S. Bureau of Reclamation in California, has been signed by the directors of the southern San Joaquin Municipal Utility District.

The contract sets forth the terms under which the bureau will deliver water from the Friant-Kern Canal for the irrigation of highly productive, but inadequately watered, lands in the San Joaquin Valley.

The term of the contract could extend from the date of its execution for a period of thirty-nine years after the year of initial delivery of water, or could be reduced to a period less than that time in the final negotiations with the district. The government is obliged to deliver 67,000 ac. ft. of firm, or class I, water each year. This amount could be increased to 91,000 ac. ft. upon action taken by the district within the first fifteen years. Additionally, the district receives, to the extent that such water might be available, up to 33,000 ac. ft. of class 2 water or 4.5 percent of the total delivered into the Friant-Kern Canal during the year, whichever is less, but is not required to take more than 4,700 ac. ft. in any one month.

Rates for each class of water will be determined and announced yearly. They would range within a maximum rate of $3.50 per ac. ft. for class 1 water and $1.50 per ac. ft. for class 2 water.

Discount on surplus for non-profit institutions

Opportunity to buy surplus property at a discount has been granted to non-profit educational and public health institutions in a new regulation issued by the Surplus Property Administration at Washington.

The discount will be allowed whether the purchase is made by the institution itself, or by a state or local government acting on its behalf.

Under the regulation, disposal agencies shall allow from the "fair value" of the property, a discount of 40% upon orders by or for educational or public health institutions. Other non-profit institutions may purchase at "fair value" —which is a price not to exceed the lowest price offered at any trade level at the time of acquisition.

The regulation (SPA No. 14) is designed to put into effect the policy expressed in Section 13 of the Surplus Property Act of 1944. It is designed to channel surplus goods on the basis of need to non-profit school systems, libraries, universities, research institutions, hospitals, medical or sanitational institutions.

Property to be acquired on a preferential basis includes not only goods directly used for health and education, but those needed for operational purposes. In the case of schools, for example, this might include, besides desks and textbooks, plumbing equipment, heaters, machines and laboratory supplies.

Urge commission for Washington highways

A move to inaugurate a seven-man bipartisan Washington state highway commission to replace the present state highway director was supported by the Washington State Good Roads Association at its annual meeting in Wenatchee Nov. 6.

The group adopted a resolution calling for submission of the proposal to voters next November as an initiative measure.

The proposed commission would be made up of one representative of each highway district, plus one commissioner-at-large. The members would be appointed by the governor with the consent of the state senate, but could not be removed except for incompetence, neglect of duty or malfeasance in office. Commissioners would serve a 6-year term, and would appoint a qualified highway engineer at $7,500 to $10,000 a year as an ex-officio member of the commission to do supervisory work.

WASHINGTON HIGHLIGHTS

Surplus Property Office work cited as effective—District of Columbia boundary to be settled—Huge stadium planned for capital

Shortly after his resignation Nov. 2 as director of the Office of Surplus Property of the Department of Commerce, William S. Bradley reported that the work of disposing of the huge quantities of surplus construction machinery had been one of the most effective disposal procedures to date. He said that the "on-the-spot" sales method had been especially satisfactory. In contrast to this favorable report, Mr. Bradley said that the procedure for disposing of the many other types of consumer's supplies was so involved and unworkable that he felt it necessary to resign as director of the Office of Surplus Property. The staff and facilities for disposing of consumer's goods were first part of the Treasury, but later were transferred to the Commerce Department. Nov. 5 they were transferred again, going to the Reconstruction Finance Corporation, which was already in control of the governmental machinery disposing of surplus war plants and other producer's facilities.

A bill changing the boundary between the District of Columbia and the State of Virginia was signed recently by President Truman. If the Virginia General Assembly approves the measure, a controversy over 100 years old will end. Ownership of certain lands on the west bank of the Potomac River has been uncertain since the 18th Century and construction of the National Airport on some of this land added importance to settlement of the controversy. The bill places the boundary at the high water mark on the Virginia side of the stream, but keeps the airport under federal control by making it federal property. However, Virginia may tax motor fuels sold at the field for highway vehicles operating outside the airport. The state is also empowered to tax and control the sale of alcoholic beverages at the airport.

Consent of Congress for the Pennsylvania R. R. tc construct and operate a bridge across the Allegheny River at Warren, Pa., is provided in a bill (S. 1543) introduced in the Senate Oct. 29. The crossing would become a part of the line running between Erie, Pa., and Ridgway, Pa.

The Federal Works Administrator is empowered to make loans or grants in an amount not to exceed 50 percent of the cost of state and local public works projects in a bill (S. 1531) introduced in the Senate Oct. 29. The purpose is to aid in creating and stabilizing full employment.

That the federal government go ahead with plans to construct a huge national stadium in Washington, D. C., has been recommended by the National Memorial Stadium Commission. This body, which was created late last year, has also recommended that the Federal Works Agency be empowered to make advances for plans for the structure. The committee has also suggested that the structure be covered. An original proposal was that the stadium provide a seating capacity of 200,000, but it is now thought that a structure for 170,000 would be large enough. Cost estimates are as high as $25,000,000. Strange as it may seem with Congress being asked to provide huge sums of federal-aid for various types of construction, the committee's report favors financing the project with private capital.

Calendar of Meetings

NATIONAL

Federation of Architects, Engineers, Chemists and Technicians, CIO., 8th national convention, Hotel Empire, New York, N. Y., Dec. 7-9.

United States Conference of Mayors, annual meeting, Hotel Astor, New York, N. Y., Dec. 10-12.

REGIONAL

Southeastern Association of State Highway Officials, Atlanta Biltmore Hotel, Atlanta, Ga., Dec. 3-4.

Black Top Roads Association, Abraham Lincoln Hotel, Springfield, Ill., Dec. 5.

Illinois Water Plant Operators, Leland Hotel, Springfield, Ill., Dec. 5-6.

South Dakota Water and Sewage Works Conference, Lawlor Hotel, Mitchell, S. D., Dec. 6-7.

Southern Michigan County Road Commissions, annual meeting, St. Joseph, Mich., Dec. 4-5.

Carolina Road Builders Association, annual meeting, Pine Needles Hotel, Southern Pines, N. C., Dec. 7-8.

American Water Works Assn., Four States Section, Lord Baltimore Hotel, Baltimore, Md., Dec. 13-15.

Ample building materials expected next year

If production is not unduly delayed by wage and pricing problems, the supply of building materials and equipment next year should be sufficient to permit the volume of new construction to exceed $7 billion, according to a prediction made by James W. Follin, managing director of the Producers' Council, at the organization's semi-annual meeting in Cleveland last week.

Irving W. Clark, manager of the Better Homes Department of the Westinghouse Electric Corp., foresaw the construction of 5,000,000 new dwellings during the next six years, the majority in the low-cost bracket. This is contingent upon the national income coming up to expectations.

Douglas Whitlock, Chairman of the advisory board advised the construction industry to embark on a program of self-regulation to avoid the danger of expanded governmental control which, he said, would reduce the future volume of building and restrict employment for construction workers.

Whitlock also urged the industry to adopt a comprehensive research program to reduce the cost of building.

Big reclamation project for Punjab, India

A 550-ft. high straight gravity dam expected to contain approximately 2½ million cu. yd. of concrete is being planned for Punjab province in India. Located on the Sutlej River about 250 mi. north of Delhi, the project is to provide water for irrigating half a million acres of arid land. Ultimately power facilities providing a total capacity of 250,000 kva. also will be installed.

The project is expected to require 6 to 7 years to be completed. It is part of a long range program which calls for 4 or 5 other dams, including one higher than Boulder Dam. The entire development is expected to require 10 to 15 years and to cost $130,000,000.

The project is being carried out by the government of the Punjab province. This body, for which T. A. W. Foy is chief engineer, is represented in the United States by the India Supply Mission, Washington, D. C.

Detailed studies for the first phase of the development have been underway for about a year. The local government, assisted by American technicians, is making the necessary geological surveys and studies. A contract for designing the dam has been let to International Engineering Co., Houston, Tex. (*ENR* Sept. 27, 1945, vol. p. 411).

Order engineers on leave back to state service

Many engineers who obtained leaves of absence from the Massachusetts State Department of Public Works to take jobs in the national defense work have been instructed to report back to work or sever their connections with the state service.

Commissioner Herman A. MacDonald said notices were sent to department engineers in private industry several weeks ago, informing them that they must return by Nov. 1 if they wished to be still considered as in the state service. At the same time notices were sent to state engineers in the armed services notifying them that the state would need them as soon as they could get their discharges.

About 350 engineers obtained leaves of absence during the war, and the loss of these men, coupled with the large scale engineering work now being carried on at Logan International Airport, has retarded the preparation of plans for other postwar projects, among them the $156,000,000 postwar highway program.

Favor new exit roadway for Holland Tunnel

The Port of New York Authority has approved the construction of a $2,350,000 viaduct exit roadway for the Holland Tunnel from 14th Street and Jersey Avenue to a point near Hoboken Avenue in Jersey City, N. J., where it will join the existing viaduct structure on 12th Street. Authorization for construction of the new roadway was made subject to the approval of Jersey City, and the New Jersey State Highway Commission.

"There is an urgent need for more adequate westbound exit roadway facilities from the Holland Tunnel," says Vice-Chairman Joseph M. Byrne, Jr. "For two years we have been studying the bottleneck caused by the two right angle turns which must be taken by westbound traffic just before the climb up the present viaduct. Our engineers have recommended the construction of a viaduct running diagonally from 14th Street and Jersey Avenue to a junction with the existing viaduct along the line of 12th Street at a point near Hoboken Avenue, Jersey City, and merging into the Jersey City Underpass.

According to Mr. Byrne the cost of the structure would be about $2,000,000, while real estate and easement rights along the line of the proposed improvement would add another $350,000. The Port Authority would assume the entire cost of the work.

Seek survey of Panama Canal needs

Passage of a bill (H.R. 4480) to provide for an overall survey of the construction needs of the Panama Canal in light of the atomic bomb and other military developments of World War II, has been recommended by both Secretary of War Patterson and the House Committee on Merchant Marine and Fisheries. The latter, reported in favor of the bill, Nov. 16.

It has been concluded that a study must be made to determine which of three construction programs would be best. These are: (1) Completion of the Third Locks Project as originally planned; (2) continuation of the Third Locks Project after it had been modified to improve the canal as a facility for navigation and to increase its security against bombing attacks, and (3) conversion of the Panama Canal into a sea-level waterway.

The Third Locks Project, which calls for the immediate construction of a third set of locks in the general vicinity of the existing twin locks but ¼ to ½ mi. away from them, was authorized by Congress Oct. 11, 1939. The chambers of the new locks were to be 140 ft. wide and 1,200 ft. long, as compared with the 110 x 1,000-ft. existing locks. Construction started in July, 1940, and was prosecuted intensively for two years on a schedule calling for completion by the end of 1945.

But in May, 1942, the construction program was modified to defer completion in view of the war. Under the modified program most of the excavation and some appurtenant construction previously commenced were carried to substantial completion, and detailed plans and specifications completed for all major features. A total of $75,000,000 was expended on the project through the fiscal year 1945.

Two important changes in the original project have been under study. One proposal is to concentrate all of the Pacific locks at one site instead of two in order to provide a terminal lake or anchorage basin above the locks to facilitate the handling of traffic. The other change would increase the width of the new locks to provide for possible future larger naval vessels.

Now the broader and more comprehensive question has been raised as to whether the project should be drastically modified for integration into a new project for converting the Panama Canal into a sea-level waterway.

In adopting the Third Locks Project it was estimated that additional facilities would be required to accommodate increased traffic by 1961. The committee reports that it is not considered safe to assume a later date for completion of these facilities, and that the detailed survey be started at once.

Toledo disapproves "Tomorrow" plan

Toledo, Ohio, which gained national publicity with plans for "Toledo Tomorrow" (*ENR* July 5, vol. p. 3) last week voted down every bond issue proposed for civic improvement and development.

Defeated were bond issues to finance the replacement of two bridges, purchase and condemnation of property to build a union depot plaza, construction of eight public swimming pools; a general hospital and a city health center, a new incinerator plant and replacement of a cemetery drainage system.

Vermont approves new flood control dam

Governor Mortimer R. Proctor has announced that the Vermont Water Conservation Board has, with his approval, notified the United States Army Engineers that the state is in agreement with the proposed construction of a flood control dam at Union Village in the town of Thetford.

The dam is to be a part of the Connecticut Valley flood control project (*ENR*, Nov. 1, vol. p. 565). It will be earth-fill, 1100-ft. long and rising to a height of 160 ft. above the valley. Width at base will be more than 800 ft. and the structure will contain about 1,600,000 cu. yds. of material. Top width will be 30 ft. A flood control reservoir of 38,000 ac. ft. capacity will be formed. The reservoir area covers 720 acres and will extend three and one-half miles up the Ompompanoosuc River.

The plans provide for maintenance of a recreational pool about 80 acres in extent. Parts of the reservoir area will be developed for public use, recreational grounds giving access to the pool. The project will cost about $2,000,000 and will require two years for completion.

Governor Proctor emphasized that the Army Engineers sought state approval of the project although amendments to the Federal 1944 flood control law made it unnecessary.

MEN AND JOBS

Theodore Knappen of New York City, has been employed by the port of Palm Beach, Fla., as consulting engineer for the proposed port improvement plan for which a million-dollar bond issue was voted last November.

Rodman B. Doremus of Greenwich, Conn., has been promoted from vice-president to executive vice-president of F. H. McGraw and Co., engineers and constructors. McGraw has also announced promotion of **Francis J. Tytus** of Farmington, Conn., from chief engineer to vice-president and chief engineer, and of **Louis B. Palmer** of West Hartford, Conn., from assistant treasurer to treasurer.

Gordon S. Young of Raleigh, N. C., has been promoted to captain from first lieutenant in Germany where he is serving with battalion headquarters of the 303rd Combat Engineers of the 78th Division. He has been overseas since October, 1944.

William G. Bush, formerly transit operation engineer, Philadelphia, Pa., has been made senior assistant construction engineer on the city's subway and elevated system.

R. Melville Smith, for many years deputy minister of Ontario's Department of Highways, has become president of the Canada Culvert Co. Ltd., at Toronto.

Mr. Smith resigned from his post with the highway bureau in June, 1943, as a result of illness.

Several changes in personnel of the Washington State Highway Department have been effected by Director **Clarence B. Shain. Leonard Clark** is named personnel engineer, succeeding L. R. Turnbull, who had held that position for 11 of the 26 years he had been with the department. **Neil R. McKay,** returned war veteran, will serve temporarily as work control engineer, replacing Henry Porak, who had been with the department for 30 years. **Roy Tillman** is transferred from Wenatchee to succeed **George Mason,** with the department 24 years, as district engineer at Olympia. **Joe Hamilton** is transferred from Yakima to Wenatchee, and **Tom Doyle** is promoted from construction engineer to district engineer at Yakima.

Vernon S. Ellington, consulting engineer, has been named city manager at Muskogee, Okla.

Bernard R. Fuller has been transferred from TVA, where he was a senior hydraulic engineer, to the Engineering Branch, Buffalo District, Great Lakes Division U. S. E. D., to take charge of the design, estimating and drafting sections. He went to TVA from the Manchester, N. H., water works and was first in the design department and later in the project planning department.

Harold E. Slack has returned to his pre-war position as senior engineer with the bridge division of the Vermont Highway Department at Montpelier. For the last two years he was with Jackson and Moreland, Boston, Mass., as engineer-appraiser on public utility valuation work.

Athanase Latour, assistant engineer of the Metropolitan Commission, Montreal, Que., has been appointed engineer for Ville La Salle, Que.

Curtis M. Varland has opened the Varland Engineering Co. for consulting work at Cincinnati, Ohio. He is a 1940 graduate of the University of Cincinnati College of Engineering.

An engineering partnership of **Jay Downer, Wharton Green** and **E. J. Carillo** has been formed as Downer, Green & Carillo, New York City. Mr. Carillo will be general manager and will continue in charge of the construction of the city's airport at Idlewild.

J. C. Gardner, Tarboro, N. C., who retired from the North Carolina State Highway & Public Works Commission on Oct. 1, after 25 years as division engineer of Division 1, has entered private practice with the Gardner Engineering Co., Tarboro.

Hal G. Sours, former Ohio State Highway Director and president of the American Road Builders Association in 1939 and 1940, has revealed that he has been named chairman of a committee which is considering a proposed $202,000,000 "thruway" across New York State. The other members of the committee are **H. M. Brinckerhoff** and **M. C. Madigan,** New York City.

Murray D. Shaffer, Mansfield, Ohio, chief engineer of the bureau of location and design in the State Highway Department has resigned to accept a position as engineering director for the Macadam Pavement Association.

Frederick H. Dechant has reopened engineering offices in Philadelphia, Pa., in association with Frederic R. Harris, consulting engineer of New York City. Mr. Dechant will also be in charge of the Philadelphia office of Frederic R. Harris, Inc.

Don H. Bushnell has been promoted to chief of the engineering staff of the Farm Credit Administration. He succeeds **W. R. Parkhill** who has retired after 26 years of service with the Federal land bank system. **W. P. Stanton,** formerly an engineer appraiser as-

Visiting the U. S. to study highway equipment and practices are the four South American engineers, standing above. They are: JORGE LOPEZ, public works engineer, LaPaz, Bolivia; OSCAR RISOPATRON, chief engineer of maintenance, Chilean highway department; ERNESTO BERRIOS, chief engineer, equipment and materials for Chile; and LUIS A. MINO, chief engineer, Ecuador Highway Department. Seated are: CHARLES M. UPHAM of the A. R. B. A.; FLOYD F. SHIELDS, and V. L. MINEAR of the Office of Inter-American Affairs.

signed to the Federal Land Bank of Berkeley, Calif., has been advanced to assistant chief of the staff in the central office of FCA at Kansas City, Mo.

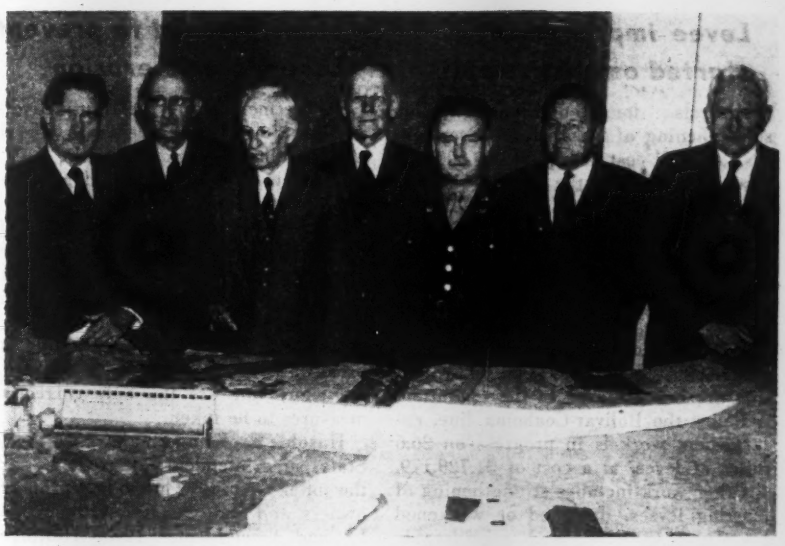
James F. Parkinson, former assistant city engineer of Cincinnati, Ohio, has been named city manager of Bay City, Mich. He succeeds J. Harry Nelson, resigned. Parkinson is a graduate of Ohio State University.

R. S. Hardie is in charge of the construction of the Federal Prison being built at Camp Cooke, near Santa Barbara, Calif. He is general superintendent for Robert E. McKee, general contractor, Los Angeles.

Robert E. McLaughlin, chief engineer of McCloskey & Co., has been transferred from the Tampa, Fla., office to the Philadelphia, Pa., office in the same capacity.

Ryburn G. Clay, director of the Georgia Highway Department, resigned Oct. 6. He will be succeeded by **George T. McDonald,** state engineer, who was appointed highway director and given the title of director-engineer.

Thos. E. Riley, Ottumwa, Iowa, who resigned recently as county engineer of Wapello County, has been named county engineer of Iowa County, to succeed **W. K. Chantry.** Mr. Riley, a graduate of the University of Iowa engineering school, has been Wapello County engineer since January, 1944 and formerly served for five years as Worth County engineer and for 16 years held a similar position in Jackson County.



Members of the board of consulting engineers, Portland (Ore.) U.S.E.D. met recently to consider numerous projects planned for the Northwest. Looking over a model of the proposed McNary Dam are: J. C. STEVENS, Portland, president of the ASCE; JULIAN HINDS, Los Angeles, Cal.; Dr. CHAS. P. BIRKEY, Columbia University; W. H. McALPIN, special assistant to the Chief of Engineers; O. J. PORTER, California Division of Highways, and L. F. HARZA, Chicago.

Gerald F. Tigges, who recently returned to Des Moines, Iowa, from Washington, D. C., where he was employed by the U. S. Coast and Geodetic Survey for the last two and half years, plans to establish a surveying and engineering practice at Des Moines.

H. C. McKean, of Mt. Pleasant, Iowa, who has been employed as an engineer and chemist at the Iowa Ordnance plant at Burlington during the war, has become city engineer for Fairfield. He was city engineer at Grinnell prior to his war plant employment.

V. L. Blalock, of the municipal engineering department at Greensboro, N. C., has been named superintendent of the city Sanitation Department, succeeding the late John J. Kelly.

Col. Kenneth M. Moore, for two years district engineer in the San Francisco office of the U. S. Army Engineers, Pacific Division, has been reassigned to the Syracuse Engineer District, N. Y. Several major military construction projects have been completed under Colonel Moore's supervision, including improvements at Hamilton Field, Mills Field, Benicia Arsenal, Fort Ord and Camp Roberts.

James H. Turner has been appointed director of utilities, San Francisco, Calif. He will succeed **Edward G. Cahill,** who resigned to be active in Cahill Bros., San Francisco contracting firm.

Wayne Lambert has been appointed city engineer at Arkansas City, Kan. He was connected with the Phillips Petroleum Co. at Borger, Tex. He succeeds **Del Lawhe,** who resigned to go into business.

Henry B. McCoy, Holton, Kan., has been appointed county engineer for Jackson County. He succeeds **Paul L. Anderson,** who for 13 years was county and city engineer for Holton. Anderson resigned to enter business.

Back to civilian activity

Lt. Andrew D. Zambetti, USNR, Jacksonville, Fla., has returned to his work as a building contractor.

Col. G. B. Drummand, formerly commander of the 382d Field Artillery, has been appointed assistant state engineer for New Mexico.

Maj. Ernest Spong, formerly chief, construction renegotiation branch, is now a partner in the contracting firm of John C. Heslep Co., Columbia, S. C.

Capt. George C. Pyne Jr., former engineer at McDill Field, Fla., has rejoined the engineering and architectural firm of H. Raymond Weeks, Durham, N. C.

Comdr. N. B. Bederman, Seabee officer, has rejoined the Arcole Midwest Corp., Chicago, Ill., as president.

Lt. Comdr. Clarence E. Stockdale has become city engineer of Sandusky, Ohio.

Commodore Roy M. Harris, CEC, is now on terminal leave. He was formerly Washington State Health Department chief engineer.

Maj. William H. Franklin, who directed construction of the Lincoln Ordnance Works and other projects, has returned to his contracting business at Springfield, Ill.

Capt. Clarence Derrick, Corps of Engineers, is now consulting engineer for the Los Angeles, Cal., Board of Public Works.

Lt. Comdr. Thomas A.. Berrigan, former assistant district public works officer, First Naval District, has become director and chief engineer, sewerage division, Metropolitan District Commission, Boston.

Levee improvement started on Mississippi

Projects for enlargement and strengthening of Mississippi River levees that will cost nearly $5,000,000 are now under way in the state of Mississippi, according to Maj. Gen. R. W. Crawford, president of the Mississippi River Commission.

Six levee enlargement programs are under way above the Bolivar-Coahoma County line, where about 21 miles of levee are being enlarged at a cost of $1,013,000. Some 3,397,000 cu. yd. of dirt are being moved in the operation.

Below the Bolivar-Coahoma line, enlargement work is in progress on 26.6 miles of levee, at a cost of $1,729,179.

Other work includes strengthening of existing levees, damaged or weakened by the 1945 flood, and considerable levee and drainage work along the Coldwater River, a part of the Yazoo Basin headwater flood control project.

Steps planned to prevent Lake Ontario erosion

Twelve members of the House Rivers and Harbors Committee, with U. S. Army engineers, went to Buffalo, N. Y., recently to inspect erosion damage at five points along the Lake Ontario shore between Ft. Niagara and Olcott. Later, Chairman Hugh Peterson assured waterfront property owners that the federal government will do all it can to solve the erosion problem.

It was agreed that the building of breakwalls or creation of beaches along the shore line are the only corrective measures to be taken.

Harold E. Klingerman, New York State superintendent of erosion, said the job is too big for individual property owners, and State Senator William Bewley and Assemblyman Jacob Hollinger of Lockport said they will try to get a state appropriation for the protection of lakefront property.

Seabees seek oil deposit in northwest Alaska

The U. S. Navy last week revealed that a detachment of Seabees is now at work in exploratory drilling for oil at Umiat, on the Colville River in northwestern Alaska. The field is 182 airline miles southeast of Barrow.

Under command of Lt. Comdr. Paul D. Davis, of Albany, N. Y., the 580 officers and men of the battalion are attempting to confirm geological maps of the area made in 1923, which indicated that oil might be found. The area is designated as Umiat No. 1, Naval Oil Reserve.

Heavy drilling equipment, capable of going down to about 7500 ft., was brought into the area on sleds, pulled by bulldozers over terrain rarely traveled.

Navy plans call for completion of the exploratory phase of the program by the end of 1949.

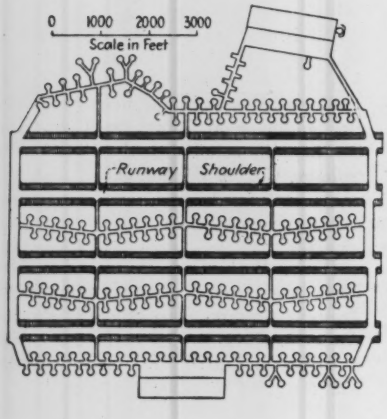
Huge B-29 airfield on Tinian Island has parallel runways

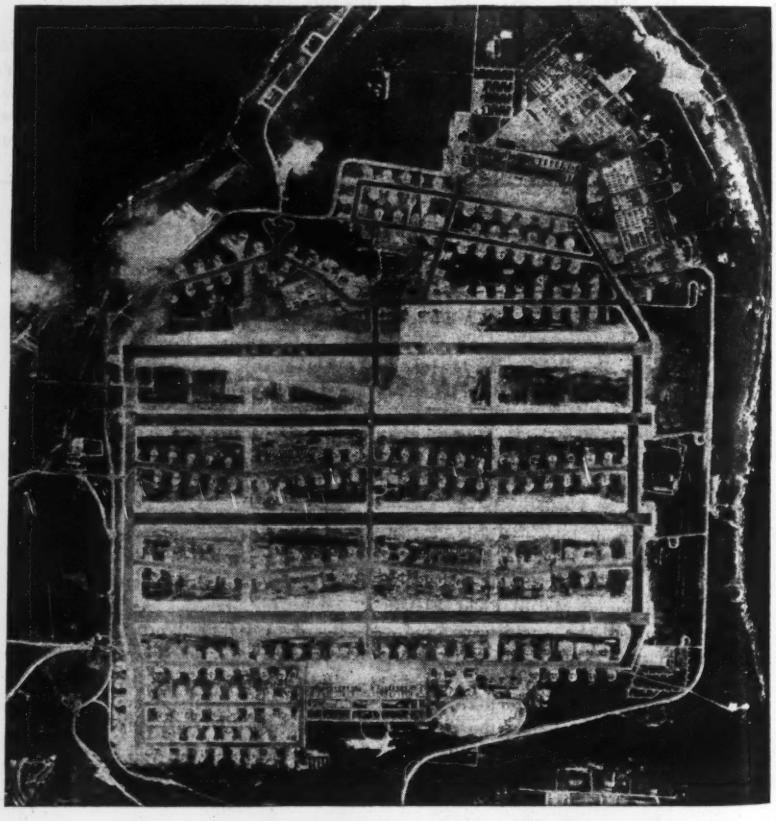
Constructed under war conditions to accommodate B-29 bombers, this airfield on Tinian Island in the Marianas, shown both in plan sketch and in an airview, played an important part in the defeat of Japan. The field provides four 8,500-ft. coral runways, surfaced with asphalt. These runways, plus the several miles of taxiways and the numerous hangars and buildings, constitute a single airbase far more extensive than any airfield yet built or even projected in the United States.

Known as North Field, Tinian, it is so designed that simultaneous use can be made of the four parallel runways, which permits about 240 planes to get into the air every hour. Also by locating the hardstands between the runways, it was possible to reduce to a minimum the taxiing distance, thus preventing the overheating of aircraft motors while traveling to point of take-off. The runways are oriented so that advantage can be taken of the prevailing winds and to provide clear approaches.

To meet the requirements for satisfactory approaches for the heavily loaded B 29's an unobstructed distance of 12 mi. at each end of the runway is provided.

Completed in May, 1945, North Field was constructed by the 1890th Aviation Engineer Battalion and the 30th and 49th Naval Construction Regiments. This is one of the fields described anonymously in Commodore P. J. Halloran's fine article "Building B-29 Bases on Tinian Island" (ENR Sept. 6, 1945, vol. p. 302).





ENGINEERING SCHOOL NEWS

Curricula broadened at Newark and Northeastern—W. P. Kimball, new dean at Dartmouth—Brazil establishing a technical university

Equal status for humanistic-social studies in the curricula of Newark College of Engineering, Newark, N. J., is the most significant feature of a re-organization plan that received final approval at a faculty meeting Nov. 8. President Allan R. Cullimore submitted the plan, previously passed on by the board of trustees. The new system will be effective next January.

The re-organization calls for the establishment of the humanities and the technological division of the college on the same level with the degree-granting departments of civil, electrical, mechanical and chemical engineering.

Commenting on the innovation, Dr. Cullimore said: "The humanities, as taught by the college place particular emphasis on the human problems which engineers will be likely to encounter in their professional careers."

The technological division deals with the fundamental scientific subjects basic to all fields of engineering, such as mathematics, physics and mechanics.

To carry out the re-organization, several important administrative changes are called for, including the appointment of a chairman and executive associate to head each of the six college departments. Chairmen and executive associates have also been named to administer the individual units which compose the two new departments.

Another institution carrying out a similar plan is Northeastern University, Boston, Mass., where engineering curricula will be on a new schedule of terms beginning September, 1946. It calls for a 30-week freshman year, four 25-week upperclass years. A full-time program covering four years will be offered returning veterans.

Some changes will take place in the distribution of credits for mathematics, physical sciences, drawing and business subjects. In humanistic-social studies the credits will be increased.

William P. Kimball, acting dean of engineering, Dartmouth College, has been appointed dean of engineering. Dean Kimball was born in Davenport, Iowa, and was graduated from Dartmouth College in 1928 with the degree of A.B., following which he received in 1929 the degree of C.E. from the Thayer School of Engineering, Dartmouth, and his A.M. from Dartmouth in 1939. Formerly connected with Moran, Proctor, Freeman and Meuser, consulting engineers, New York, Dean Kimball, a specialist in soil mechanics, was appointed professor of civil engineering 1933.

Prof. P. L. Reed retired recently as head of the department of civil engineering at the University of Florida after 25 years of service. He joined the university in 1920 and is a graduate of Lehigh University and a native of Massachusetts.

The Brazilian government, anticipating a need for more and better trained engineers to aid the country in its plans for future economic development, has earmarked $300,000 for each of the next five years to construct the Technical University of Ouro Preto in the state of Minas Gerais.

Established on the foundation of the present National School of Mines and Metallurgy, the new university will give degrees in six branches of engineering. These are: Civil, metallurgical, mining, industrial chemistry, mechanical and electrical.

Five major objectives for which engineers should strive, according to James C. Zeder, chairman of the engineering board of the Chrysler Corp., are: Better human relationships between engineering and all other fields; more effective presentation of engineering ideas; closer coordination between industry and our centers of engineering education; a broader education for all future engineers; and a broader over-all conception of the obligations, scope, capabilities and future of our engineering profession.

Bureau of Reclamation photo

Construction of Cascade Dam, Idaho, to be resumed

Construction of Idaho's newest federal irrigation dam, the Cascade, will be undertaken by the Bureau of Reclamation next spring in the stretch of the North Fork of the Payette River in southwestern Idaho, pictured above. The left abutment of the 368,000-cu. yd. earth-fill structure will be situated near the exposed rock face in the right center of the photograph. The dam will be 90 ft. high, 660 ft. wide at the base, 860 ft. long at the crest, and store 700,000 ac. ft. of water to irrigate 25,000 acres of new land on the Payette Division of the Boise Project. It will provide a supplemental supply for 85,000 irrigated acres in the Emmett Valley. Work on the project, begun in 1941, was halted by the War Production Board in 1942.

About 11½ miles of state highway and 32 miles of county roads will be relocated in connection with this project. Construction of approximately 45 miles of branch canal and about 250 miles of laterals will be undertaken under contract next April and May. The main pumping plant will also be built by contract.

The division office at Caldwell will be in charge of Richard Adams for the canal, pumping plant and lateral and drainage systems. Earl Harmon will be engineer in charge of the Cascade division for construction of the dam and reservoir.

Timing seen as construction aid

(*continued from first page*)

ing. It is not possible to predict accurately the volume of public works in this category but, on the basis of such information as is available, it is considered that not more than one-half of the public works program subject to control by FWA will be of such character. Fifty percent is assumed for the present purpose.

ECONOMIC EFFECT OF PUBLIC CONSTRUCTION

Assumptions	Resulting Percentages—Total Construction	Resulting Percentages—National Income
Construction will account for	...	12
Public work will be	33.3	4
Federal share of public work will be 50%,* or	16.7	2
FWA share of Federal will be 50%, or	8.3	1
FWA can defer 50% of its share, or	4.2	0.5

* This item includes federal aid to highways.

Note:—The FWA deferrable portion becomes 50% x 50% = 25% of the total federal program, or 12.5% of total public construction.

"On these assumptions, it is found that the volume subject to deferment by FWA is only 25 percent of the normal total federal works program. This would be 12.5 percent of the entire public works construction, somewhat more than 4 percent of the total construction industry volume, and 0.5 percent of the total national economy. The proportion could be increased somewhat by postponing some classes of maintenance. Deferment of this amount of new construction, during a period of expanding economy, appears to be the most that could be accomplished by the FWA if acting alone."

The committee went on to say that with the aid of other federal agencies responsible for public works these figures could be increased somewhat, but that even if it were possible to stop all federal work during a boom, that would represent only about two percent of the national income.

Public work as a stimulant

"In time of depression," the committee said, "timing of public construction can be of greater help because of its stimulating effect. If the volume of federal public works could be double that carried on during a period of prosperity it would offset a shrinkage of 25 percent of all private construction.

"However, it is not to be anticipated that such stability can be maintained indefinitely. . . . It is generally accepted that $15 billion of new construction per year is a good estimate for coming years. The federal share is likely to be $2.5 billion. Doubling that volume would mean $5 billion of federal work in a year. The peak of federal spending for construction during the depression of the 1930's (including all the made-work which properly cannot be considered as construction) was reached in 1936 when the total for the year was well below $3 billion. Federal public work sufficient to maintain a $15 billion total under such conditions as existed during the depth of the depression would entail government expenditures of approximately $13 billion per year. Such figures are fanciful. The grand total of all contemplated federal work presently proposed and authorized is less than $13 billion and many projects will require several years for construction.

"The obvious conclusion is that suitable timing of federal public work may be counted on for substantial assistance in bolstering up a declining construction industry. It is unreasonable to expect it to contribute sufficiently to maintain a volume of construction equal to that anticipated during prosperous times, nor can it be used as a stabilizing panacea for controlling cycles in the overall economy.

Problems of timing

"The referring or advancing of construction of public works projects is by no means just a matter of manipulating the timing at will. Timing is not entirely an optional matter, particularly with state and municipal governments. Some public works projects are so intimately associated with private development that their construction cannot be delayed wisely when private activity is expanding. Such structures as hospitals, schools, streets, water supplies sewage disposal facilities, and other public utilities may be needed urgently in connection with an expanding community. Undue restriction of needed highway improvement and expansion easily could lead to serious handicapping of the allied private interests.

"On the other hand, the value of some types of important and necessary undertakings may not be impaired seriously by delaying their construction for a period of months, or even a year or two. Major federal projects such as those for flood control, drainage, irrigation, or harbor improvements constitute a large portion of the public works program. Generally, these are not of great urgency and it should be possible to schedule them with some arbitrariness without serious adverse effect on the life of the country."

• • •

Differential analyzer demonstrated at M.I.T.

A new 100-ton electro-mechanical differential analyzer was demonstrated Oct. 29 at the Massachusetts Institute of Technology, Cambridge, Mass.

In addition to performing operations in extremely intricate mathematical problems in electrical and mechanical fields, the machine is expected to be very useful in solving complicated equations in the civil engineering field, in minimizing time and labor in flood and run-off calculations, moment determination, stress analyses in complicated frames, and in the determination of deflections under moving loads due to numerous variable attendant conditions.

The machine is virtually an automaton, containing 2000 electronic tubes, several thousand relays, about 150 motors, and approximately 200 miles of wire.

JOBS OF THE WEEK

HOSPITAL, Memphis, Tenn.

Foster & Creighton Co., Nashville, Tenn., has been awarded a contract for a 7-story, basement building for the West Tennessee Tuberculosis Hospital, by State Tuberculosis Commission, Nashville, at $2,443,000. Furbringer & Ehrman and Everett Woods, Memphis, are the architects.

WAREHOUSE, Vernon, Calif.

Brunswig Drug Co., Los Angeles, awarded a contract for a 2-story, warehouse to William Simpson Construction Co., Los Angeles, Calif., at $1,200,000. A. C. Martin, Los Angeles, is the architect.

FACTORY, Chicago, Ill.

George Sollitt Construction Co., Chicago, Ill., will construct a 1 and 2-story, 200x384 ft. factory for American Coating Mills, Chicago. The estimated cost is $1,000,000. Magnus Gundersen, Chicago, Ill., is the structural engineer.

Note—Additional bidding and contract news on many projects large and small, including the above items, appear in the Construction News section beginning on page 18.

OBITUARY

Walter F. Massey, 51, consulting engineer and building code expert, died in White Plains, N. Y., Nov. 13. For a time he had been in charge of a field party working on the U. S. Geodetic Survey, and later was an engineer in the White Plains Department of Public Works, also acting as building inspector.

Alfred G. Krause, 60, died in Duluth, Minn., Oct. 27. He had been an engineer for the Soo Line and at the American Steel and Wire Co., for many years.

Willis C. Bickford, 59, general manager and chief engineer of the Port of Seattle, Wash., died Nov. 4. He was a graduate in civil engineering from the University of South Dakota. After being a deputy Snohomish County Engineer at Everett, Wash., he was appointed county engineer in 1914.

Following service in France with the 63rd Coast Artillery during World War I, Colonel Bickford became engineer for the Lake Chelan Reclamation District at Wenatchee, Wash. He served as Seattle's superintendent of building for two years, then became general manager and chief engineer of the Port of Seattle in 1935. For many years he was president of the Seattle Construction Council.

Charles Holz, 65, former instructor at the College of Engineering, University of Cincinnati, died Nov. 6.

Charles Galloway, a city waterworks engineer for more than 40 years, died in Cleveland, Ohio, recently.

Charles S. Bennett, 54, chief engineer at the port of Halifax, N. S., for the National Harbors Board of Canada, died Nov. 3. He was graduated in civil engineering from the University of New Brunswick, in 1912, served the New York Harbor Drydock Co. for a year, and was with the Fraser Brace Co. for five years on power projects in Canada. He had been with the Harbors Board at Halifax for the last 15 years, joining as assistant engineer, and had been chief since 1937.

Harley E. Frye, 70, Lowell, Ohio, retired civil and consulting engineer, died there Nov. 10. He had headed the U. S. harbor surveys on the Ohio River and had charge of early levee construction work along the Mississippi River.

Walter T. Schmink, 55, for 14 years superintendent for the Pennsylvania State Highway Department in Luzerne County, died Nov. 12 at Wilkes-Barre.

Frederic Alexander Mitchell, an employee of the Kansas City, Mo., Structural Steel Co., and for 38 years a contracting engineer, died Oct. 26.

Albert J. Ammon, 65, for seven years associated with the flood commission of the Indianapolis, Ind., engineering department, died Nov. 11. He had previously served for 30 years as bridge superintendent of the National Concrete Co.

Thomas H. Schaper, 63, for 16 years a construction supervisor with Fry Construction Co., Erie, Pa., and head of the Erie County Commission, died Nov. 11. He was widely known in the road construction and contracting business throughout Pennsylvania.

R. S. Lea, 79, consulting engineer and graduate of McGill University, died in Charlottetown, P.E.I., Canada, Nov. 10. He was assistant professor of civil engineering at McGill from 1893 until 1902.

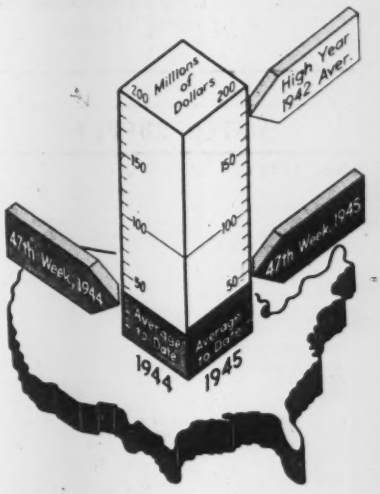
Harry F. Wilson, 61, president of H. F. Wilson & Sons, contractors, died in Norfolk, Va., Nov. 8.

William Hood, 86, Brownwood, Tex., contractor, died there Nov. 6. He constructed many buildings in West Texas, including the Brownwood city hall, the Brown County courthouse, and the Howard Payne College buildings.

Nick G. Gordon, 57, head of the Cleveland Steel Co., who directed many large structural steel projects, died in Indianapolis, Ind., Nov. 15. He was directing construction of a new power plant by his company for the Indianapolis Light and Power Co. Mr. Gordon directed placement of steel in the Union Terminal project in Cleveland and in the construction of the Bay Bridge between San Francisco and Oakland. Recently his company worked on the tunnels of the Pennsylvania Turnpike, a motion-picture stage in Hollywood, a postoffice in Los Angeles, and the Kingsbury ordnance plant at La Porte, Ind.

Albert S. J. Atkinson, 67, assistant inspector of buildings in the District of Columbia for 32 years and an architect, died in Washington, Nov. 16. A graduate of the University of North Carolina, Mr. Atkinson retired as assistant building inspector about 10 years ago and went into private architectural practice, specializing in commercial buildings and remodeling work in the District of Columbia.

CONSTRUCTION ACTIVITY



As Reported This Week to... *Engineering News-Record*

CONTRACT VOLUME

Continental U. S. Only (Thousands of Dollars)

	Week of Nov. 22 1945	Cumulative 1945 (47 wk.)	Cumulative 1944 (47 wk.)
Federal	$5,385	$722,038	$1,036,625
State & Mun.	8,096	343,169	226,711
Total Public	13,481	1,065,207	1,263,336
Total Private	32,662	926,570	337,207
U. S. Total	**$46,143**	**$1,991,777**	**$1,600,543**

WHERE CONSTRUCTION ACTIVITY ORIGINATED THIS WEEK

Type of Work	Dollar Volume (Thousands) This Week	Cumulative 1945 (47 wk.)	Cumulative 1944 (47 wk.)
Waterworks	$1,398	$52,755	$30,004
Sewerage	661	30,659	28,955
Bridges	396	39,773	14,767
Highways	2,322	205,506	183,058
Earthwork, Waterways	767	51,200	62,080
Buildings, Public	6,319	445,545	599,678
Industrial	17,372	521,018	159,338
Commercial	12,807	294,663	131,020
Unclassified	4,101	349,999	391,643

NOTE: Minimum size projects included are: Waterworks and waterway projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1945 (47 wk.)	Cumulative 1944 (47 wk.)
NON-FEDERAL	$690,449	$419,274
Corporate Securities	179,830	106,720
State and Municipal	347,019	167,587
RFC Loans	24,600	61,940
REA Loans	60,000	20,000
Fed. Aid Highway	79,000	63,000
FEDERAL	1,049,898	1,263,800
Total Capital	1,740,347	1,683,047

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Nov. '45	309.28	148.67
Building Cost	Nov. '45	240.55	130.00
Volume	Oct. '45	167	73

CONSTRUCTION REPORTS

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *DARWIN R. DAY, Statistics* — *J. A. MAHONEY, Reports*

(Daily service also available—Write for details)

WATER SUPPLY

BIDS ASKED

Bids Asked November 29

Fla., Sarasota—Smith & Gillespie, engrs., Roberts Bldg., Jacksonville, water sys. addns., imprvs., for City. CD 10/24—ENR 11/1 under BA.

Bids Asked December 12

★**O., Alliance**—City, Contr. 5, WW imprvs., water softening plant, appurtenances, $500,000. Chester Engineers, 210 E. Parkway, Pittsburgh, Pa., engrs.

LOW BIDDERS

Ill., Mason City—City, City Hall, Oct. 24, 125,000 gal. elevated water tank, from Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago, $16,495. J. J. Woltmann, 314 Unity Bldg., Bloomington, consult engr.

Ind., North Madison—Town Bd., F. S. Pommerehn, clk., Oct. 15, WW Sys., from R. D. Green, Vincennes, $66,870. Est. $80,000.

Mo., Kennett—City, J. C. Karstens, mayor, City Hall, rejected bids Nov. 7, WW plant, incl. equip., auxiliaries, watermains, etc. CD 9/28—ENR 10/4.

★**N. Y., New York**—Bd. Water Supply, 120 Wall St., Nov. 14, Contr. 359, furnishing, testing, del. conical plug valves, connecting pipes and controlling mechanisms for operating chambers of the Delaware Aqueduct, from S. Morgan Smith Co., 500 Lincoln St., York, Pa., $575,097. CD 10/22—ENR 10/25.

Ore., Oak Grove—Oak Lodge Water Dist., Oak Grove, Nov. 12, exten. water sys. with c.i. and galvanized iron pipe, from Rushlight Automatic Sprinkler Co., 55 N.E. Farragut, Portland, $43,542. CD 10/29—ENR 11/1.

Tex., Dallas—City, City Hall, Nov. 7, c.i. watermains, in Oak Cliff, from E. L. Dalton & Co., Great National Life Bldg., $19,680. CD 10/30.

Tex., Houston—City, M. H. Westerman, secy., City Hall, 24-in. watermain from Scott St., at Alabama to Calhoun Rd. at Wheeler St., through grounds of Public School Stadium and University of Houston Campus, Calhoun Rd., from J. G. Holland, 1602 Old Spanish Trail, $72,141. CD 10/31.

†**Wash., Seattle**—Yards & Docks Annex, Navy Dpt., Arlington, Va., Nov. 13, water distr. and fire protection sys. addns., alterations, at Piers 90 and 91, Spec. 17331, from Western Constr. Co., Arctic Bldg., Zone 4, $32,000. CD 10/31.

CONTRACTS AWARDED

★†**Calif., San Diego**—Yards & Docks Annex, Navy Dpt., Arlington, Va., steel siphons for San Diego Aqueduct, NOY 13215, to Haddock Engineer Ltd., 129 W. Second St., Los Angeles, $640,856. CD 10/29—ENR 11/1.

Fla., Pass-a-Grille Beach—Pinellas Co., 200,000 gal. elevated water tank, to R. D. Cole, Noonan, Ga., $23,400.

Mont., Fort Benton—City, City Hall, 400,000 gal. steel water storage tank and 2,500 ft. 4- to 8-in. watermain, to M. F. Kiely & Son, Box 65, Butte, $25,406. Est. $23,000. Bids 11/1. CD 10/18.

O., Alliance—City, W. W. Shidler, dir. P. Wks., City Hall, WW imprvs., Contr. 3, water booster station, to E. R. Garlock & Assoc., 624 Ecton Ave., Akron, $13,875; Contr. 2, fdns. and piping for water storage standpipe, to Kintz Constr. Co., 62 E. Summit St., $38,392; Contr. 1, water storage standpipe, to Chicago Bridge & Iron Co., Guildhall Bldg., Cleveland, est. $90,000. Grand total about $142,267. Bids 10/22. CD 1/19—ENR 2/8 under Postwar Projects.

O., Hamilton—Comrs. Butler Co., Hamilton, water supply and distr. sys. in Fairfield Sewer Dist., to C. F. McCurdy, 160 E. Mitchell Ave., Cincinnati, $32,355. Est. $30,000. F. M. Hammerle, co. engr.

Pa., Phila.—City, Dpt. P. Wks., City Hall, Contr. WW1-224, watermains, to Counties Contracting & Constr. Co., Opal and Cambria Sts., $239,856. Awarded 11/13.

Tex., San Antonio—C. W. Fenstermaker, 311 Soledad St., c.i. waterlines. Owner builds. $15,000. CD 8/29—ENR 9/6.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Bids Asked November 28

N. Y., St. George (sta. Staten Island)—President Richmond Boro, Boro Hall, Zone 1, sanitary sewer, Chelsea St. from Amboy Rd. to point about 600 ft. southerly therefrom incidental work; sanitary sewer Titus Ave. from existing sewer at point about 900 ft. south of New Dorp Lane to point about 400 ft. north of Ebbitts St., etc.

Bids Asked November 29

Md., Baltimore—City, c/o Bd. Awards, City Hall, sanitary sewers, appurtenant work, Contr. 353. Plans deposit $5.

Bids Asked

Tenn., Union City—City, c/o City Clerk, City Hall, constructing, completing sanitary sewers of varying sizes, lift station with equip., water lines, etc. $150,000. Russell & Axon, 6635 Delmar Blvd., University City, St. Louis, Zone 5, Mo., engrs.

LOW BIDDERS

D. C., Wash.—District Comrs., Nov. 8, replacing K St. sewers, from A. J. Ellis Constr. Co. Inc., 1178 Morse St. $32,189.

D. C., Wash.—District Comrs., District Bldg., Nov. 9, 8,125 ft., sewer pipe, 3,190 ft. watermain South Capital, Forrester and Irvington Sts., from Robert Lombardi, Real Estate Trust Bldg., Phila., Pa. $68,379. CD 11/2.

†**Md., Patuxent River (br. Wash. D. C.)**—Yards & Docks Annex, Navy Dpt., Arlington, Va., Nov. 15, sewage disposal sys. imprvs., Naval Air Station, NOY 13220, from Dean & MacDonald, Inc., Hollywood, Md. $26,800. CD 11/12.

Mo., Kennett—City, J. C. Karstens, mayor, City Hall, rejected bids Nov. 7, sanitary sewers. CD 9/28—ENR 10/4.

Tex., Dallas—City, City Hall, Nov. 7, sanitary sewers in North and East Dallas, from E. L. Dalton & Co., Great National Life Bldg., $27,030. CD 10/30.

Tex., Fort Worth—City, S. H. Bothwell, mgr., City Hall, Nov. 14, Contr. 1, sewage treatment plant, from Glade Constr. Co., Century Bldg. $399,613. CD 10/23—ENR 10/25.

CONTRACTS AWARDED

Ore., Albany—City, City Hall, main and lateral sewers along Columbus St., lateral sewers in 2 other residential districts, to Leonard & Slate, Oregon, Ltd., 7804 S.W. 40 St., Portland, $33,452.

Pa., Duquesne—City, Chas. E. Dorman, clk., City Hall, incinerator plant, one 50 ton and one 30 ton furnace units, to Pittsburgh Des Moines Steel Co., Neville Island, Pittsburgh. Est. $66,500. R. Dell, City Bldg., city engr. CD 10/31.

Pa., Pittsburgh—City, Dpt. P. Wks., F. M. Roessing, dir., City Hall, storm and sanitary sewers, to A. Parente & Son, 651 Paulson St., $36,906. C. H. Barrett, 441 City County Bldg., archt.

Tex., San Antonio—C. W. Fenstermaker, 311 Soledad St., sanitary sewer lines. Owner builds. $25,000. CD 8/29—ENR 9/6.

Location of ENR Correspondents

Symbols and Abbreviations Include:

† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED: (except Streets & Roads); BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

BRIDGES

BIDS ASKED

Bids Asked November 27

Kansas—State Hy. Dpt., La Crosse, Br. 33.2, Proj. 564-B, Cowley Co.; Br. 34.9, rein.-con. box, Proj. 149B; Br. 31.1A, Proj. 149B; Br. 29.0, Proj. 149B; Br. 33.0, rein.-con. slab, Proj. 149B; Br. 31.10, Proj. 149B; Br. 29.4, Proj. 149B, all foregoing in Rush Co. R. C. Keeling, Topeka, engr.

North Carolina—State Hy. & Pub. Wks. Comn., Raleigh, structures on 6.294 mi. N.C. Rt. 53 from east of Burgaw toward Jacksonville, Proj. 3815, $15,000-$25,000; on 8 mi. same road, Proj. 3814, $50,000-$75,000, both Pender Co., reconstructing 0.866 mi. bridge over Roanoke River, between Rich Square and Scotland Neck, Proj. 1382, Halifax and North Hampton Counties, $30,000-$40,000, structures 1.117 mi. N.C. 27, between west of Carthage and Biscoe, Proj. 5756, Moore Co., $15,0000-$25,000; 0.837 mi. U. S. 15-A, south of Lillington toward Lillington, Proj. 4367, Harnett Co., $25,000-$50,000; 5.095 mi. from Stem toward Oxford, Proj. 353, Granville Co., $25,000-$50,000; 6.74 mi. U. S. Rt. 1, north of Raleigh toward Bayleaf, Proj. 308, Wake Co., $15,000-$25,000; widening Roanoke Bridge, on U. S. 17, Williamston, Proj 1066, Martin and Bertie Counties, $300,000-$400,000; replacing bridge between N. C. Rt. 87 and Chapel Hill, Betterment sect. 5-7-42-21, Orange and Alamance Counties, $50,000-$75,000, structures 1.468 mi. U. S. Rt. 601 in Mount Airy, to U. S. Rt. 601, Proj. 7672, Surry Co., $25,000-$50,000; 2.32 mi. east of N. C. Rt. 8 toward U. S. Rt. 311, Proj. 7496, Stokes Co., $15,000-$25,000; 3.958 mi. U. S. Rt. 18, from northeast of Sparta toward junction with N. C. Rt. 89, Proj. 7093, Allegany Co., $25,000-$50,000; 11.267 mi. east of Wadesboro to west end of Pee Dee Bridge, on U. S. Rt. 74, Proj. 6091, Anson Co., $100,000-$125,000; 0.138 mi. overhead bridge and concrete approaches Hamilton St., High Point, Proj. 5331, Guilford Co., $50,000-$75,000; 30.96 mi. U. S. Rt. 1, from Proj. 4856 to Proj. 4885, Proj. 4852, Wake Co., $15,000-$25,000. W. V. Baise, Raleigh, state hy. engr.

Bids Asked November 28

Kansas—State Hy. Dpt., Salina, Br. 22.1, rein.-con. slab, Proj. 44-A; Br. 21.5, Proj. 44-B, both Saline Co.; Br. 4.5, Proj. 185D, Cloud Co.; Br. 22.5, three 23 ft. timber spans, Proj. 44-A; Br. 21.3, rein.-con. box, Proj. 44B; Br. 23.5, Proj. 69A, foregoing in Saline Co.; Br. 6.9, Proj. 185D; Br. 4.9, Proj. 185D, both Cloud Co. R. C. Keeling, Topeka, engr.

Bids Asked December 5

California—State Div. Hys., Sacramento, 2 bridges across Los Angeles Aqueduct and Cache Creek, between 3.5 and 4.5 mi. west of Mojave, Kern Co. G. T. McCoy, Sacramento, hy. engr.

Bids Asked December 6

California—State Div. Hys., P. Wks. Bldg., Sacramento, rein.-con. overcrossings on Santa Ana Parkway, 7 St., on Santa Ana Parkway, 4 St., on Hollywood Parkway at Benton Way, and rein.-con. overcrossing